



engineman had an opportunity of jumping, both going over the engine, the fireman being thrown clear.

The statements of all the employees on train No. 1, the speed was very moderate at the time of derailment, the train having left its last stopping point, less than 2 miles distant, 10 minutes prior to the occurrence of the accident.

Examination of the track showed that the wheels of the locomotive had dropped down inside of the outer rail of the curve, due to the spreading of the inside rail. There were flange marks on the inside of the webs of the next two rails, which indicated that these rails had turned over, the locomotive running along on the webs. At this



No. 1.—View of track approaching point of derailment from the north.

point the angle bars gave way and the locomotive ran over the ties an additional two rail lengths before the coupling was broken between the engine and tender, the engine turning over and going down the embankment on the inside of the curve.

The track for a distance of one-half mile on each side of the point of derailment was found to be in bad condition, and in many instances the gauge was tight at the rail joints while at the centers the rails were spread outward. In some of these cases the gauge at the joints was 4 feet 8 inches, while at the centers it was 4 feet 9 $\frac{1}{4}$  inches. This condition is shown in illustration No. 1, a view taken from the north, looking toward the point of the accident. Illustration No. 2 shows a similar condition existing south of the point of derailment. Two rails were found with crescent-shaped breaks in the flange on the inside, one 6 inches in length and one 11 inches in length. About 50

angle bars were found having only one or two bolts in them, this conclusion due to the fact that some of the rails had no bolt holes in them, while others were so badly matched that the holes in the angle bars did not register with the holes in the ends of the rails. Illustration No. 3 shows the use of a broken angle bar at a rail joint, while illustrations Nos. 4 and 5 show the use of angle bars in cases where no bolt holes were drilled in the rails, or the bolt holes in the rails did not match with the holes in the angle bars. Twenty-five angle bars were found in this mile of track which were broken or badly sheared, while in some cases there were spaces of as much as 2 inches between the ends of the rails.



No. 2.—View of track south of point of accident.

This examination of the track also developed a poor condition of spiking. Many could be drawn by hand, while in other places five or six consecutive ties had no spikes in them. It was also found that in some places spikes had been loosened until they were from three-quarters of an inch to 1 inch away from the base of the rail; in one rail only two spikes out of 17 consecutive spikes on the inside of the rail were holding the same. Many ties were found which were not in serviceable condition, the ends being broken off. Illustration No. 6 shows the ends of broken ties which had been allowed to remain in the track.

Discussing the track conditions, Division Engineer Bayse stated that the appropriation allowed for maintenance on the Terminal Division, on whose tracks this accident occurred, was used in the en-



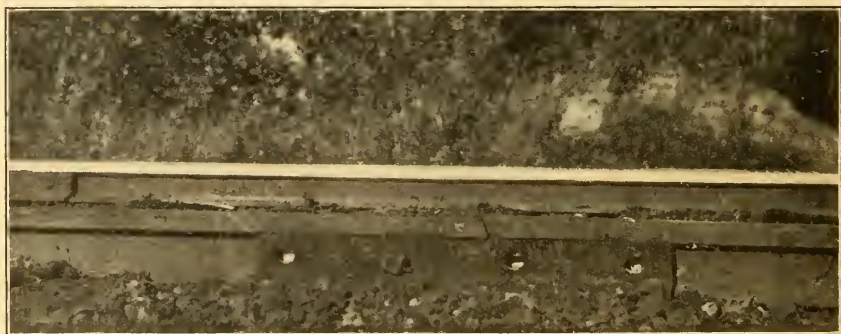
deavor to keep up the weak points in order to keep traffic moving, although they were not always successful in doing this before accidents occurred. Mr. Bayse further stated that the track on which this derailment occurred was in the same condition as when he took charge, one year previously, no improvement of conditions



No. 3.—Use of broken angle bar at joint.

having been made, although there had been 10 or 12 derailments in that time.

Locomotive No. 51 is a six-wheel switching locomotive. It is not adapted to passenger service, but on account of the fact that the locomotive regularly assigned to this run had been in the shops since



No. 4.—Use of angle bars not matched with holes drilled in rails, or where no holes had been drilled in rails.

August, six-wheel switching locomotives had been used to haul this train since that time. Examination of locomotive No. 51 showed the lateral motion, flanges, etc., to be in good condition, and there was nothing about the engine which it was believed could have been responsible for the derailment.

This accident was caused by the spreading and turning over of three rails on the inside of the curve, due to the existence of track conditions which were so bad as not to permit of the operation of trains in safety. These track conditions were extremely dangerous,



No. 5.—Improper use of angle bars; same condition as shown in figure No. 4.

embracing bad ties, worn and bent rails, short and broken angle bars, joints fastened with but one or two bolts, on account of rails undrilled at the ends, or angle-bar holes not registering with the



No. 6.—Ties remaining in track with ends broken off.

holes drilled in the rails, loose and missing spikes, and track out of surface, gauge, and alignment.


In connection with previous accident investigations, attention has been called to the fact that many derailments have been due to the existence of track conditions so bad as to constitute a dangerous

menace to the traveling public. In many cases the speed of the trains involved has been a contributing factor, the speed limits allowed having been higher than seemed to be warranted by the track conditions. In the case of the accident here under investigation, however, the question of speed is not involved, there being no doubt that the track conditions existing in the vicinity of this derailment were such that trains could not be operated with safety even at low speed.

Respectfully submitted.

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